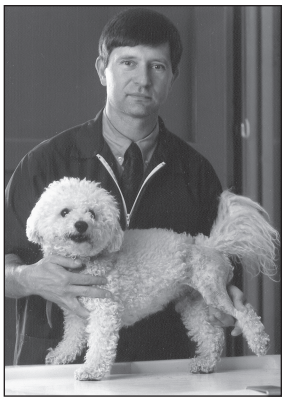
Orthopedics Orthopédie



Feline orthopedics

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If you were to ask the average small animal practitioner to comment on the subject of feline orthopedics you would likely hear the old adage that if you keep the 2 ends of a feline fracture in the same room they will heal. Recent entries to the literature have debunked that myth (1,2) and a text on the subject of feline orthopedics has underlined the many ways in which orthopedic considerations in the cat differ significantly from those in the dog (3).

Cats do have several advantages as orthopedic patients when compared with dogs including their light weight, straight bones, and relative lack of genetic developmental disease with the exception of hip dysplasia and patellar luxation. Anatomically, several differences exist between the species (3). The presence of the supracondylar foramen in the humerus of the cat through which the median nerve and brachial artery pass limits the safe corridors for placement of intramedullary and external skeletal fixator pins (3). The presence of a clavicle in the cat and a sesamoid bone in the origin of the supinator muscle in 40% of cats, which can occasionally be seen on lateral radiographic projections of the proximal radius, need to be recognized as normal anatomical structures and not mistaken for pathology (3). The absence of a supratrochlear foramen in the distal humerus of the cat makes this area more resistant to fracture thus making humeral condylar fractures relatively rare in this species. The presence of a significant blood supply to the hip via the round ligament of the femoral head may be one reason why Legg-Perthes disease has not been documented in the cat (3). The feline cranial cruciate ligament is thicker than the caudal cruciate ligament which is the reverse of what is seen in dogs and may be why cranial cruciate rupture is less common in the cat (3).

Primary neoplasia of bone occurs much less frequently in cats than in the dog comprising less than 1% of feline malignancies. Osteosarcoma accounts for the majority of these tumors. While the signalment of osteosarcoma is similar in both species, the behavior of the tumor is somewhat less aggressive in cats; it is slower to metastasize resulting in longer mean survival times (4).

Contracture of forelimb or hind-limb tendons is a relatively common orthopedic condition in the cat. In newborn kittens, a contracture producing deformity of the hind limbs will usually spontaneously resolve when the kittens become ambulatory. In older kittens or adult cats, contracture of forelimb tendons has been described as a complication related to declaw procedures or other trauma, or there may be no known cause. The flexor carpii ulnaris and flexor carpii radialis tendons are the most often affected resulting in flexure and valgus deviation of the carpus and paw. Splinting of the affected limbs can be helpful but tendon transaction may be required (3).

Radial hemimyelia is a congenital condition where the radius is severely underdeveloped or completely absent. There is a genetic linkage to polydactyly. Some people selectively breed for this deformity and market what they call "twisty cats" or "kangaroo cats." Affected individuals hop along on their rear limbs with only rudimentary use of the front limbs.

Scottish Fold cats carry an autosomal dominant trait affecting cartilage metabolism that in the heterozygous state produces the breed's characteristic buttoned-down ears. In the homozygous state these cats develop a severe ankylosing arthritis affecting most joints but especially the spine, feet, and hind limbs. Symptomatic therapy is the only treatment (3,4).

Cats that present with a plantigrade posture of the hind limbs may be displaying the signs of a diabetic neuropathy but this gait can also be caused by disruption of the gastrocnemius tendon. While the most common site of disruption is distally near the tendon's insertion on the calcaneus, cats also show a tendency to avulse one or both of the heads of the gastrocnemius muscle at their origin on the caudodistal femur. A link between Achilles tendon ruptures in humans and the use of fluoroquinolone antibiotics prompted the United States Food and Drug Administration to issue a "black box warning" in the summer of 2007. Whether this risk extends to veterinary species is unknown but anecdotal reports of cases where a link was suspected have surfaced (4,5).

Feline fractures show some similarities, but also some important differences, when compared with those in dogs. Most fractures occur in the hind limb; as much as 73% in one survey and 87% of the fractures surgically repaired in our practice from 2000–2008. Of the surgically repaired fractures in our practice, 70% involved the femur with just less than half of those involving the proximal or distal physes of immature cats. Proximal femoral physeal fractures were divided evenly between those with a traumatic origin and atraumatic slipped capital physes. Slipped capital physes are caused, in part, by a physeal dysplasia thought to be associated with early neutering, especially in male cats. The physis stays open much longer than expected in individuals neutered early. This, combined with a

physeal dysplasia where the normal columnar arrangement of chondrocytes is disrupted, along with a young adult cat that is overweight causes the physis to "slip." Femoral head and neck ostectomy will return these patients to normal function. Exactly what constitutes "early" neutering is far less clear. The majority of affected individuals had been neutered before 6 months of age, although neutering at 7 months of age has also been shown to prolong physeal closure times in the cat (6).

To put to rest the myth of universal, uncomplicated fracture healing in the cat, a review of feline nonunions was published showing an increased incidence in older cats, heavier cats, cats with fractures of the tibia or proximal ulna, cats with open or comminuted fractures, and cats with fractures repaired with a type II external fixator (1). The link to a type II external fixator simply indicates a repair method favored for use in the tibia and proximal ulna.

A great many cats with pelvic fractures will heal with conservative therapy; however, narrowing of the pelvic canal can have devastating effects on the cat's future ability to pass stool normally, so surgical repair should be considered if pelvic canal narrowing is a concern.

Fractures of the face and head, especially the mandibles and maxillae are much more common in cats making up between 11–23% of all their fractures (3). The most common of these fractures involves the mandibular symphysis, which can be effectively wired.

While the topic of osteoarthritis in cats has received relatively little press, one review found a radiographic incidence of over 90% in cats aged 12 years or greater. The authors postulated that osteoarthritic-related symptoms are under-recognized and underappreciated by veterinarians and owners (7). There has been a scarcity of non steroidal anti-inflammatory drugs approved for use in the cat, and a marked reluctance to use those that are available. At least one paper has demonstrated long-term safe use of meloxicam in the cat at an initial loading dose of 0.1 mg/kg daily for 4 days followed by a dose of 0.1 mg per cat per day regardless of body weight (8).

No discussion of orthopedic concerns in the cat would be complete without some mention of declawing. A review of complications in a supervised student surgery situation showed more early complications associated with scalpel blade techniques. These complications included pain, swelling, hemorrhage, and lameness. Surgery times were significantly longer with these techniques. On the other hand, later complications, including P2 protrusion, infection, regrowth, lameness, and palmigrade stance, were more commonly encountered with crushing techniques using nail trimmers and tissue adhesives, for example (9). The most serious and potentially least correctable complications are associated with vascular or neurologic compromise that are linked to prolonged use of a tourniquet during the procedure or bandage-related complications post-operatively.

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